

18. The optical arrangement according to claim 17, wherein said illumination optical system includes an arrangement of replaceable fixed optics.

19. The optical arrangement according to claim 17, wherein said illumination optical system includes a variable optical system for modifying said illumination diameter.

20. The optical arrangement according to claim 19, wherein said variable optical system operates steplessly for modifying said illumination diameter in a continuous manner.

21. The optical arrangement according to claim 20, wherein said variable optical system is a zoom optical system.

22. The optical arrangement according to claim 21, wherein said zoom optical system is motorized.

23. The optical arrangement according to claim 22, wherein said zoom optical system is a video camera zoom optical system.

24. The optical arrangement according to claim 17, wherein said microscope includes a plurality of predefined objectives selectively positionable in said illumination beam path, and said illumination optical system modifies said illumination diameter to match the entry pupil of a selected one of said plurality of objectives.

25. The optical arrangement according to claim 25, wherein said illumination optical system automatically modifies said illumination diameter.

26. The optical arrangement according to claim 18, wherein said illumination optical system<sup>6</sup> is arranged downstream from a point light source of said microscope. | Frs. 1
27. The optical arrangement according to claim 18, wherein said illumination optical system<sup>6</sup> is arranged downstream from an optical fiber light source of said microscope. | Frs. 2
28. The optical arrangement according to claim 19, wherein said illumination optical system is arranged downstream from a point light source of said microscope. | Frs. 1
29. The optical arrangement according to claim 19, wherein said illumination optical system is arranged downstream from an optical fiber light source of said microscope. | Frs. 2
30. The optical arrangement according to claim 24, wherein said illumination optical system includes a collimating optical system with a fixed focal intercept and a variable focal length, whereby said illumination diameter is adaptable to the entry pupil of a selected one of said plurality of objectives. | 2 How
31. The optical arrangement according to claim 18, wherein said illumination optical system includes an expanding optical system for a coupled-in laser beam. | Frs. 3
32. The optical arrangement according to claim 19, wherein said illumination optical system includes an expanding optical system for a coupled-in laser beam. | Frs. 3
33. The optical arrangement according to claim 32, wherein said illumination beam is variably expandable in accordance with the ratio of the focal length of said variable optical system to the focal length of said expanding optical system. | !

34. The optical arrangement according to claim 24, further comprising an optical component in said illumination beam path for altering an intensity distribution of said illumination beam to increase illumination intensity near the edge of said illumination beam.

35. The optical arrangement according to claim 34, wherein said further optical component is an additional lens.

36. The optical arrangement according to claim 34, wherein said further optical component is an annular stop.

37. The optical arrangement according to claim 34, wherein said further optical component is a holographically generated optical element.

38. The optical arrangement according to claim 17, wherein a laser light beam from a further light source can be coupled in to said illumination beam path via an additional input and is adaptable to the entry pupil of the objective with no adaptation of the actual illumination beam path.

39. The optical arrangement according to claim 17, wherein said microscope is a multiphoton laser scanning microscope.--